CLAIMS

What is claimed is:

1. A method of preparing a sample substantially free of genomic DNA, comprising the following steps:

(a) forming a tissue/cell lysate from a biological sample;

(b) contacting a pre-filtration column with said lysate, wherein said pre-filtration column comprises a filter material, wherein said filter material has at least one layer of glass or borosilicate fiber; and

(c) collecting effluent from said column, wherein said effluent is substantially free of said genomic DNA.

2. The method of claim 1, wherein said lysate is formed employing a lysis buffer comprising a chaotropic agent.

3. The method of claim 2, wherein said chaotropic agent is selected from a group consisting of guanidine isothiocyanate, ammonium isothiocyanate, guanidine hydrochloride and combinations thereof.

4. The method of claim 2, wherein said chaotropic agent is at a concentration ranging from about 0.5 M to about 5.0 M.

5. The method of claim 1, wherein said biological sample is selected from the group consisting of animal and plant tissues and/or cells.

6. The method of claim 5, wherein said animal tissues and/or cells are selected from a group consisting of blood, urine, hair, skin, muscle, bone, bodily fluids, organ extracts and alike.

7. The method of claim 1, wherein said filter material has a particle retention ranging from about 0.1 μm to about 10 μm.

8. The method of claim 1, wherein said filter material has a thickness ranging from about 50 μm to about 2000 μm.

9. The method of claim 1, wherein said filter material has a specific weight ranging from about 75 g/m^2 to about 300 g/m^2.

10. A method of isolating nucleic acid from a sample matrix, comprising the following steps:

(a) forming a sample preparation by disrupting tissue and cells contained in said sample matrix using a lysis buffer;

(b) contacting a silicon carbide column with said sample preparation of (a); and

(c) eluting said nucleic acid from said silicon carbide column.

11. The method of claim 10, wherein said nucleic acid is RNA.

12. The method of claim 1, wherein step (a) includes DNA digestion.

13. The method of claim 10, wherein one or more chaotropic agents are used in said lysis buffer of step (a).

14. The method of claim 13, wherein said chaotropic agent is selected from a group consisting of guanidine isothiocyanate, ammonium isothiocyanate, guanidine hydrochloride and combinations thereof.

15. The method of claim 13, wherein said chaotropic agent is at a concentration ranging from about 0.5 M to about 5.0 M.

16. The method of claim 10, wherein one or more organic solvent binding enhancers are included in step (a).

17. The method of claim 16, wherein said enhancer is an alcohol selected from the group consisting of methanol, ethanol, isopropanol and combinations thereof.

18. The method of claim 10, wherein said silicon carbide column is a silicon carbide whiskers column, wherein said silicon carbide whiskers column has a frit, and silicon carbide whiskers adjacent to said frit.

19. The method of claim 10, wherein said lysis buffer comprises β-mercaptoethanol.

20. The method of claim 10, wherein said lysis buffer has a pH in the range from about 4 to about 8.

21. The method of claim 10, wherein said elution is performed using an elution buffer selected from the group consisting of nuclease free H_2O, EDTA, and sodium citrate.

22. The method of claim 21, wherein said elution buffer has a pH ranging from about 6 to about 9.

23. The method of claim 10 further comprising the step of adding a DNase, under conditions suitable for DNA digestion, to an eluate obtained from said eluting step.

24. A method of isolating nucleic acid from a sample matrix, comprising the following steps:

(a) forming a tissue/cell lysate from said sample matrix;

(b) contacting a pre-filtration column with said lysate, wherein said pre-filtration column comprises a filter material, wherein said filter material has at least one layer of glass or borosilicate fiber; and

(c) collecting effluent from said column, wherein said effluent is substantially free of said genomic DNA;

(d) contacting a silicon carbide column with said effluent of (c); and

(e) eluting said nucleic acid from said silicon carbide column.

25. The method of claim 24, wherein said nucleic acid is RNA.

26. The method of claim 24, wherein step (c) includes DNA digestion.

27. The method of claim 24, wherein one or more chaotropic agents are used in said lysis buffer of step (a).

28. The method of claim 27, wherein said chaotropic agent is selected from a group consisting of guanidine isothiocyanate, ammonium isothiocyanate, guanidine hydrochloride and combinations thereof.

29. The method of claim 27, wherein said chaotropic agent is at a concentration ranging from about 0.5 M to about 5.0 M.

30. The method of claim 24, wherein one or more organic solvent binding enhancers are included in step (a).

31. The method of claim 30, wherein said enhancer is an alcohol selected from the group consisting of methanol, ethanol, isopropanol and combinations thereof.

32. The method of claim 24, wherein said silicon carbide column is a silicon carbide whiskers column, wherein said silicon carbide whiskers column has a frit, and silicon carbide whiskers adjacent to said frit.

33. The method of claim 24, wherein said lysis buffer comprises β-mercaptoethanol.

34. The method of claim 24, wherein said lysis buffer has a pH in the range from about 4 to about 8.

35. The method of claim 24, wherein said elution of step (e) is performed using an elution buffer selected from the group consisting of nuclease free H_2O, EDTA, and sodium citrate.

36. The method of claim 35, wherein said elution buffer has a pH ranging from about 6 to about 9.

37. The method of claim 24 further comprising the step of adding a DNase, under conditions suitable for DNA digestion, to an eluate obtained from said eluting step (e).